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MAY 6 - 1968

CURRENT SERIAL RECORDS

# ***WATER SUPPLY OUTLOOK FOR WASHINGTON***

and  
FEDERAL - STATE - PRIVATE COOPERATIVE SNOW SURVEYS

UNITED STATES DEPARTMENT of AGRICULTURE--SOIL CONSERVATION SERVICE,

and

DEPARTMENT of WATER RESOURCES STATE of WASHINGTON

Data included in this report were obtained by the agencies named above in cooperation with the U.S. Forest Service, U.S. Geological Survey, National Park Service, and other Federal, State and Private organizations.

AS OF  
**FEB. 1, 1968**

## TO RECIPIENTS OF WATER SUPPLY OUTLOOK REPORTS:

Most of the usable water in western states originates as mountain snowfall. This snowfall accumulates during the winter and spring, several months before the snow melts and appears as streamflow. Since the runoff from precipitation as snow is delayed, estimates of snowmelt runoff can be made well in advance of its occurrence. Streamflow forecasts published in this report are based principally on measurement of the water equivalent of the mountain snowpack.

Forecasts become more accurate as more of the data affecting runoff are measured. All forecasts assume that climatic factors during the remainder of the snow accumulation and melt season as they affect runoff will add to be an effective average. Early season forecasts are therefore subject to a greater change than those made on later dates.

The snow course measurement is obtained by sampling snow depth and water equivalent at surveyed and marked locations in mountain areas. A total of about ten samples are taken at each location. The average of these are reported as snow depth and water equivalent. These measurements are repeated in the same location near the same dates each year.

Snow surveys are made monthly or semi-monthly from January 1 through June 1 in most states. There are about 1400 snow courses in Western United States and in the Columbia Basin in British Columbia. In the near future, it is anticipated that automatic snow water equivalent sensing devices along with radio telemetry will provide a continuous record of snow water equivalent at key locations.

Detailed data on snow course and soil moisture measurements are presented in state and local reports. Other data on reservoir storage, summaries of precipitation, current streamflow, and soil moisture conditions at valley elevations are also included. The report for Western United States presents a broad picture of water supply outlook conditions, including selected streamflow forecasts, summary of snow accumulation to date, and storage in larger reservoirs.

Snow survey and soil moisture data for the period of record are published by the Soil Conservation Service by states about every five years. Data for the current year is summarized in a West-wide basic data summary and published about October 1 of each year.

## PUBLISHED BY SOIL CONSERVATION SERVICE

D. A. WILLIAMS, Administrator

The Soil Conservation Service publishes reports following the principal snow survey dates from January 1 through June 1 in cooperation with state water administrators, agricultural experiment stations and others. Copies of the reports for Western United States and all state reports may be obtained from Soil Conservation Service, Western Regional Technical Service Center, Room 507, 701 N. W. Glisan, Portland, Oregon 97209.

Copies of state and local reports may also be obtained from state offices of the Soil Conservation Service in the following states:

STATE	ADDRESS
Alaska	P. O. Box "F", Palmer, Alaska 99645
Arizona	6029 Federal Building, Phoenix, Arizona 85205
Colorado (N. Mex.)	12417 Federal Building, Denver, Colorado 80202
Idaho	P. O. Box 38, Boise, Idaho 83707
Montana	P. O. Box 98, Bozeman, Montana 59715
Nevada	P. O. Box 4850, Reno Nevada 89505
Oregon	1218 S. W. Washington St., Portland, Oregon 97205
Utah	4012 Federal Building, Salt Lake City, Utah 84111
Washington	360 Federal Office Building, Spokane, Washington 99201
Wyoming	P. O. Box 340, Casper, Wyoming 82602

## PUBLISHED BY OTHER AGENCIES

Water Supply Outlook reports prepared by other agencies include a report for California by the Water Supply Forecast and Snow Surveys Unit, California Department of Water Resources, P. O. Box 388, Sacramento, California 95802 --- and for British Columbia by the Department of Lands, Forests and Water Resources, Water Resources Service, Parliament Building, Victoria, British Columbia



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FEDERAL - STATE - PRIVATE COOPERATIVE SNOW SURVEYS

*Issued by*

**D.A. WILLIAMS**  
ADMINISTRATOR  
SOIL CONSERVATION SERVICE  
WASHINGTON, D.C.



*Released by*

**ORLO W. KRAUTER**  
STATE CONSERVATIONIST  
SOIL CONSERVATION SERVICE  
SPOKANE, WASHINGTON

*In Cooperation with*

**H. MAURICE AHLQUIST**  
DIRECTOR  
DEPARTMENT OF WATER RESOURCES  
STATE OF WASHINGTON



*Report prepared by*

**ROBERT T. DAVIS, Snow Survey Supervisor**

SOIL CONSERVATION SERVICE  
360 U.S. COURTHOUSE  
SPOKANE, WASHINGTON 99201





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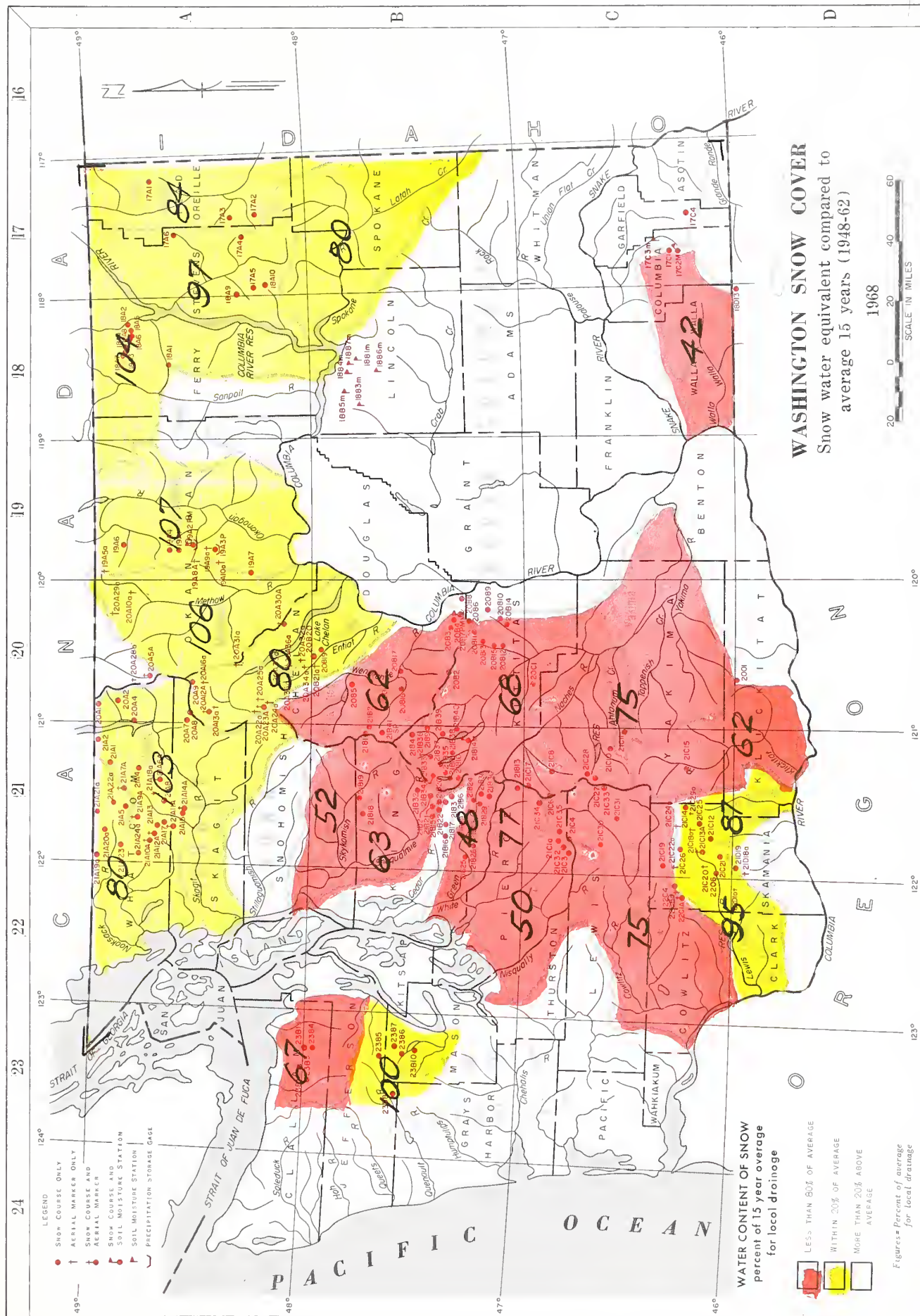
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# INDEX to WASHINGTON SNOW COURSES, SOIL MOISTURE STATIONS and PRECIPITATION STORAGE CAGES

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.	NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.	NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
UPPER COLUMBIA DRAINAGE																	
Pend Oreille River																	
Boyer Mountain	17A2	7	31N	43E	5250	Squilchuck Creek	20B3	12	21N	19E	4400	Lewis River	21C29a	21	4N	10E	5600
Bunchgrass Meadow	17A1	24	37N	44E	5000	Scout-A-Vista	20B4	18	21N	20E	3400	Divide Meadow	21C29b	21	4N	10E	5600
Manchester Creek	17A3	30	33N	43E	2970							Grand Meadow	21C29c	21	4N	10E	5600
Kettle River																	
Boulder Road	18A2	36	39N	36E	1450	Stemilt Creek	20B8	34	21N	20E	4450	Lone Pine Shelter	21C26	26	8N	7E	3800
Butte Creek	18A3	28	39N	35E	4070	Jump-Off	20B9	30	21N	20E	5000	Marble Mountain	22C6	24	8N	5E	3200
Cabin Creek	18A4	5	38N	36E	3170	Stemilt Slide	20B7	30	21N	20E	4400	New Nuddy River	21D19	22	6N	7E	3100
Gout Creek	18A5	26	39N	35E	3595	Upper Wheeler						Oldman Pass	22C1a	35	5N	4400	
Snow Caps Creek	18A5	3	38N	36E	2150							Plains of Abraham	22C1b	35	5N	4400	
Snow Caps Trail	18A6	5	38N	36E	2720							Smith Creek Road	22C1c	29	9N	6E	2100
Summit G. S.	18A7	20	39N	35E	4600							Spencer Meadow	21C13a	14	7N	8E	4250
Colville River																	
Beard	17A6	19	36N	42E	3215	Crab Creek	20C1	32	27N	34E	2440	Table Mountain	21C13b	14	7N	8E	4250
Carlson	18A9	34	32N	38E	2885							Timbered Peak	21D18a	36	6N	6E	3000
Chewelah	17A5	26	31N	41E	4925												
Stranger Mountain	17A6	21	31N	38E	4990												
Togo	18A10	6	29N	38E	3370												
Sanpoil River																	
Sherman Creek Pass	18A1	19	36N	35E	5350												
Okanogan River																	
Clark	19A8a	2	36N	23E	7000												
Clackamuck	19A9a	20	36N	24E	6750												
Mutton Creek No. 1	19A1	30	37N	24E	5700												
Mutton Creek No. 2	19A2	19	37N	24E	5700												
Payasayen	20A28a	32	40N	18E	4300												
Rusty Creek	19A3P	18	35N	24E	4300												
Salmon Meadows	19A2PM	33	37N	24E	4500												
Starvation Mtn.	19A10a	15	35N	23E	6750												
Touts Coulee	19A6	30	39N	25E	2845												
Methow River																	
Billy Goat Pass	20A10a	10	38N	20E	6400												
Dollar Watch	20A29a	8	39N	20E	7000												
Horseshoe Basin	20A5a	7	37N	18E	6500												
Loup Loop	19A5a	15	40N	23E	7000												
	19A7	36	34N	23E	4650												
Chelon Lake Basin																	
Cloudy Pass	20A22a	12	31N	15E	6900												
Greenwood Flat	20A25a	3	31N	16E	3540												
Little Meadows	20A24a	8	31N	16E	3275												
Lyman Lake Flat	20A13a	18	34N	16E	5900												
Park Creek Ridge	20A13a	18	34N	16E	5900												
Park Creek Ridge	20A12a	7	34N	16E	4600												
Petersen Creek	20A16a	3	34N	17E	3730												
Bayly Pass	20A9	21	35N	17E	4780												
Safety Harbor	20A30	32	31N	20E	6300												
Mar Creek Pass	20A31a	34	33N	18E	6500												
Entiat River																	
Brief	20B19	34	28N	19E	1600												
Entiat Meadows	20A33a	28	31N	17E	4850												
Entiat River Trail	20A34a	2	29N	17E	3150												
Fox Camp	20A36a	17	30N	18E	6510												
Pope Ridge	20B20	22	29N	18E	4300												
Pugh Ridge	20A32a	24	30N	18E	6400												
Snow Brushy	20A35a	31	30N	17E	3850												
Tommy Creek	20B21a	10	28N	18E	5300												
Wenatchee River																	
Serne-Mill Creek	21B23	7	26N	15E	2925												
Berne-Mill Creek (New)	21B41SP	13	26N	14E	3240												
Blewett Pass No. 2	20B2	35	22N	17E	4270												
Chaukaum G. S.	20B16	4	25N	17E	1810												
Lake Wenatchee	20B95	33	27N	17E	1970												
Leavenworth R. S.	20B17	1	24N	17E	1127												
Merritt	20B18	4	26N	16E	2140												
Stevens Pass	21B1	14	26N	13E	4070												
LOWER COLUMBIA DRAINAGE																	
Asotin Creek																	
Spruce Springs	17C4	9	8N	42E	5700												
Mill Creek																	
Couse	17C3m	2	9N	35E	3370												
Hornstead	17C31	31	9N	40E	4300												
Hot Springs (Helmars SN)	17C23	23	9N	38E	2400												
Walla Walla Diversion	18D13	22	6N	38E	2400												
Klickitat River																	
Status Pass	20D1	21	6N	17E	4030												
West Fork Cabin	21C15	23	9N	12E	3000												
White Salmon River																	
Cultus Creek	21C12	35	7N	8E	4000												
Lewis River																	
Blue Lake	21C22a	19	9N	8E	4800												
Bob's Trail	21C21	25	8N	7E	2200												
Calamity Ridge	22D1a	4	26N	16E	2140												
Council Pass	21C16a	24	9N	9E	4200												
Skykomish River																	
Lake Elizabeth	21B19	33	26N	10E	2900												
Snoqualmie River																	
Bandera Air Strip	21B32	16	22N	10E	1635												
Ollalie Meadows	21B2	19	22N	11E	3655												
South Fork Tolt	21B18	26	26N	9E	1900												
Skokomish River																	
Black and White	23B7	17	24N	5N	4200												
Black and White	23B6	16	24N	5N	4200												
Four Stream	23B10	1	23N	6N	3000												
Home Sweet Home	23B5	28	25N	5N	5200												
Sundown Pass	23B8	25	24N	7N	3900												
Dungeness River																	
Deer Park	23B4	1	28N	5N	5200												
Morse Creek																	
Deer Park G. S.	23B13	1	28N	5N	4850												
Morse Creek	23B12	25	29N	7N	5425												
Elwha River																	
Hurricane	23B3	36	29N	7N	4500												
Skokomish River																	
Black and White	23B7	17	24N	5N	4200												
Black and White	23B6	16	24N	5N	4200												
Four Stream	23B10	1	23N	6N	3000												
Home Sweet Home	23B5	28	25N	5N	5200												
Sundown Pass	23B8	25	24N	7N	3900												
Nooksack River																	
Bald Mountain	21A19a	7	40N	7E	4400												
Canyon	21A20a	20	40N	8E	5100												
Glacier Creek	21A23	9-10	38N	7E	3700												
Hamagan Pass	21A22a	8	39N	9E	5000												
Mazama Park	21A24a	2	37N	7E	4500												
Panorama	21A5	17	39N	9E	4300												
Twin Lakes	21A21a	16	40N	9E	5200												
OLYMPIC PENINSULA																	
Dungeness River																	
Deer Park	23B4	1	28N	5N	5200												
Morse Creek																	
Deer Park G. S.	23B13	1	28N	5N	4850												
Morse Creek	23B12	25	29N	7N	5425												
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Black and White	23B7	17	24N	5N	4200												
Black and White	23B6	16	24N	5N	4200												
Four Stream	23B10	1	23N	6N	3000												
Home Sweet Home	23B5	28	25N	5N	5200												
Sundown Pass	23B8	25	24N	7N	3900												
NUMBERING SYSTEM EXAMPLE																	
21A7 SHOW COURSE ONLY																	
21A7N AERIAL MARKER ONLY																	
21A7A SHOW COURSE AND AERIAL MARKER																	
21A7M SHOW COURSE AND SOIL MOISTURE STATION																	
21A7P SHOW COURSE AND PRECIPITATION STORAGE GAGE																	
21A7SP SHOW PLOW																	



## WATER SUPPLY OUTLOOK

State of Washington

February 1, 1968

\*\*\*\*\*  
\* The water supply outlook for irrigation and power in the Columbia \*  
\* River basin in Washington and its tributary streams varies from \*  
\* adequate to poor. Snow surveys made in the State and adjacent \*  
\* areas indicate a snowpack which ranges from 7% above normal to \*  
\* 58% below. By areas, the north central portion of the State has \*  
\* a good snow cover; the south central, fair; the northwest, ade- \*  
\* quate; the west central area along the Cascades from fair to poor; \*  
\* the southwest, fair; the northeastern, good, and again the Blue \*  
\* Mountains have experienced a poor snow condition. Generally \*  
\* speaking, the higher elevation snows are better than the measure- \*  
\* ments made at the middle and lower elevations. In some instances \*  
\* low elevation snow courses have shown up remarkably well. Fall \*  
\* soil moisture conditions were near average. Irrigation reservoirs \*  
\* generally have excellent amounts of water in storage for this time \*  
\* of year but the power reservoirs range from good for Ross and \*  
\* Chelan to fair for Coeur d'Alene and Franklin D. Roosevelt. There \*  
\* should be no problem in filling these latter two reservoirs. The \*  
\* runoff picture during the month of January was average on the \*  
\* main stem of the Columbia; much above average in the central part \*  
\* of the State east of the Cascades, and very poor in the Southeast \*  
\* portion. \*  
\*\*\*\*\*

### SNOW COVER

None of the watersheds reported in this outlook can be considered real good for this time of year. Those areas along the north central portion of the State are better than most while the Walla Walla, Green, Nisqually and Skykomish watersheds have the lowest snow cover, percentagewise. There is no strong indication that the trend shows there is better snow occurring at the high elevations.

### RESERVOIRS

The irrigation picture in the State can be considered good for this time of year and much better than we have experienced in recent years. The five Yakima reservoirs have water in storage 36% better than last year; 68% better than that which occurred in 1966, and 37% greater than average. The Okanogan reservoirs have near average amounts of water in storage while the Coeur d'Alene and Franklin D. Roosevelt reservoirs have much below normal amounts but should fill with the spring runoff. The Chelan Lake reservoir has much more water in storage with the likelihood that some spillage might take place to keep the lake elevation from rising too high.



## PRECIPITATION

The September-October precipitation was generally above average except on the east side. November precipitation was much below normal and that which occurred during December near normal as was January. The big deficit of November will be very hard to overcome especially with the near normal precipitations that have occurred recently. The United States Bureau of Reclamamtion reports that since September 1 precipitation at their five reservoirs was only 2% above normal.

## SOIL MOISTURE

The moisture in the soil mantle this past fall was near that which was measured in previous years. Recent measurements have shown a general improvement in the soil moisture condition at all stations except for those two in the Yakima watershed.

## STREAMFLOW

January runoff ranged from very high to very low. The main stem of the Columbia had near normal flows as did those of the Kettle and Pend Oreille. The Spokane had low flows but the water coming out of Canada and from the central area of the State was well above normal during January--near record amounts of measured water for this past month. In contrast, the Walla Walla had a near record low flow for the same period. The Klickitat and Cowlitz flowing into the lower Columbia ranged from 21% below on the Klickitat to 1% above on the Cowlitz. In the northeastern corner the Skagit had a flow that was 84% greater than average. Numerical forecasts are not made by the Soil Conservation Service in the State of Washington in February. Indications are, though, that the flow at Birchbank and down to the confluence of the Snake will be near normal. The flow at The Dalles is expected to be in the high 80%. With the March 1 report a better indication of future runoff will be available and at that time numerical forecasts will be made for all of these streams as well as others in the State.



# COMPARISON OF SNOW COVER WITH THAT OF PREVIOUS YEARS

The following tabulation of Washington stream basins presents the water content of the snow about February 1, 1968, as per cent of the same date in 1967 and 1966 and average of record.

Tributary Basin	No. of Courses Average	Years of Record	1968 1967	Snow Water Expressed as per cent of 1966	1948-62 Avg.
<u>UPPER COLUMBIA BASIN</u>					
Pend Oreille	5 - 8	4 - 31	73	81	84*
Kettle	9 - 12	2 - 28	98	99	104*
Colville	5	6 - 9	152	82	97*
Spokane	1 - 3	4 - 23	76	84	80*
Okanogan	19 - 26	2 - 3	83	114	107*
Methow	6 - 9	8 - 24	80	128	106*
Chelan	1 - 6	3 - 14	67	122	80*
Entiat	1 - 8	3 - 7	147	80	83*
Wenatchee	7 - 8	7 - 23	79	72	62*
Yakima	13 - 17	9 - 46	88	66	68*
Ahtanum	1	26	169	60	75*
<u>LOWER COLUMBIA</u>					
Mill Creek	3	14	44	18	42*
Klickitat	1	10	100	25	62*
White Salmon	2	10	74	74	87*
Lewis	13 - 16	5 - 10	90	70	95*
Cowlitz	7 - 9	4 - 16	72	68	75*
<u>PUGET SOUND</u>					
Nisqually	3 - 4	2 - 11	42	58	50*
White	1	17	69	87	77*
Green	6 - 9	6 - 21	54	51	48*
Snoqualmie	1	18	68	58	63*
Skykomish	1	23	53	58	52*
Skagit	4 - 6	11 - 18	86	126	103*
Nooksack	1	11	74	100	80*
<u>OLYMPIC PENINSULA</u>					
Skokomish	4 - 5	4 - 10	89	101	100*
Elwha	1	8	67	87	--
Dungeness	1	14	61	50	67*

\* Records of less than 15 years used in computation of average





# RESERVOIR STORAGE - 1000 Acre Feet

BASIN or STREAM	RESERVOIR	USABLE <u>1/</u> CAPACITY	1968	Measured (February)			Normal*
				1967	1966		
<u>COLUMBIA</u>							
Spokane	Coeur d'Alene Lake	225.1	93.8	238.0	53.8	131.0	
Columbia	Franklin D. Roosevelt Lake	5232.0	2485.1	3477.2	3170.0	4059.3	
Columbia	Banks Lake <u>2/</u>	761.8	714.9	761.8	506.1	484.3	
Okanogan	Conconully Reservoir	13.0	6.3	3.2	0	7.0	
Okanogan	Salmon Lake	10.5	9.0	3.2	7.8	8.9	
Chelan	Lake Chelan	676.1	461.4	225.0	272.0	341.0	
<u>YAKIMA</u>							
Yakima	Keechelus Lake	157.8	126.1	113.0	76.4	87.4	
Kachess	Kachess Lake	239.0	211.3	186.3	162.8	171.9	
Cle Elum	Lake Cle Elum	436.9	372.1	235.0	186.4	240.9	
Bumping	Bumping Lake	33.7	16.9	5.9	3.2	10.4	
Tieton	Rimrock Lake	198.0	130.4	91.0	82.4	113.0	
<u>PUGET SOUND</u>							
Skagit	Ross Reservoir <u>2/</u>	1202.9	1212.6	1132.2	867.9	766.9	
Skagit	Diablo Reservoir	90.6	86.0	84.7	85.9	85.7	
Skagit	Gorge Reservoir	9.8	7.9	8.4	7.4	--	

1/ Based on Active Storage

2/ Less than 15-year record in period 1948-62

\* 15-year average 1948-62



# SOIL MOISTURE - FEBRUARY

Drainage Basin and Station	Number	Elev.	Profile Depth	(Inches) : Soil Moisture Content			
				Total Capacity	(Inches) as of Feb. 1		
					1968	1967	1966
<u>CRAB CREEK</u>							
Creston-Kunz	18B1m	2440	48	13.6	6.1	7.9	5.3
Jack Woods	18B3m	2600	48	13.6	7.4	7.9	7.0
Krause	18B4m	2440	48	13.6	5.7	8.4	6.9
Sheffels	18B5m	2360	48	13.6	4.9	7.5	5.1
Sherman	18B7M	2440	48	13.6	5.9	5.6	--
Wheatridge	18B6m	2200	48	13.6	6.1	7.8	5.9
<u>OKANOGAN</u>							
Salmon Meadows	19A2M	4500	48	5.4	2.8	3.6	2.1**
Trout Creek	3-M	3600	48	7.3	4.7***	4.3*	3.4
<u>YAKIMA</u>							
Domery Flat	21B20m	2200	48	6.9	4.8*	4.9	4.4*
Lake Cle Elum	21B14M	2200	48	12.8	9.2*	9.2	8.9*
<u>WALLA WALLA</u>							
Couse	17C3m	3650	48	11.1	7.5	7.4	7.2
Helmers	17C2M	4400	48	12.0	11.2	10.0	6.8
<u>WENATCHEE</u>							
Upper Wheeler	20B7M	4400	48	12.7	10.0	10.3	8.0

\* January 1 measurement

\*\* March 1 measurement

\*\*\* December 1 measurement

## FALL SOIL MOISTURE

Drainage Basin and Station	Number	Elev.	Profile Depth	(Inches) : Soil Moisture Content			
				Total Capacity	(Inches) as of Oct. 1		
					1967	1966	1965
<u>CRAB CREEK</u>							
Creston-Kunz	18B1m	2440	48	13.6	4.6	5.0	4.9
Jack Woods	18B3M	2600	48	13.6	5.2	4.3	5.0
Krause	18B4m	2440	48	13.6	4.9	5.1	5.8
Sheffels	18B5m	2360	48	13.6	3.7	3.8	4.0
Sherman	18B7m	2440	48	13.6	3.6	3.7	--
Wheatridge	18B6m	2200	48	13.6	4.0	4.1	4.3
<u>OKANOGAN</u>							
Salmon Meadows	19A2M	4500	48	5.4	1.5	3.0	1.9
Trout Creek	3-M	3600	48	7.3	4.0	3.8	4.1
<u>YAKIMA</u>							
Domery Flat	21B20m	2200	48	6.9	4.8	2.4	1.9
Lake Cle Elum	21B14M	2200	48	12.8	9.1	6.4	6.9
<u>WALLA WALLA</u>							
Couse	17C3m	3650	48	11.1	5.4	5.7	6.0
Helmers	17C2M	4400	48	12.0	6.7	6.7	6.2
<u>WENATCHEE</u>							
Upper Wheeler	20B7M	4400	48	12.7	5.6	5.7	6.2



# PRECIPITATION 1/

## Division Averages and Departures

DRAINAGE DIVISIONS	FALL		WINTER	
	Sept- Oct	1967 <u>2/</u>	Nov.-Dec. 1967	January 1968 <u>2/</u>
	Average	Departure	Average	Departure
Columbia in Canada	3.98	-1.57	7.60	-1.02
Pend Oreille - Spokane	7.08	-1.12	9.44	-3.05
Northeastern Washington	3.93	-0.89	6.32	-1.12
Southeastern Washington	4.12	-1.44	5.91	-2.39
Central Washington	9.84	-3.54	16.26	-3.51
North Central Washington	2.96	-0.08	4.42	-0.30
Northwest Slope Cascades	20.36	-3.27	32.22	-2.34
Southwest Slope Cascades	12.74	-6.02	20.98	-6.49

Northeastern Washington	- Lower Spokane, Colville, Sanpoil and lower Kettle drainages.
Southeastern Washington	- Touchet, Tucannon and Palouse drainages.
Central Washington	- Yakima, Wenatchee and Chelan drainages.
North Central Washington	- Methow and Okanogan drainages.
Northwest Slope Cascades	- Puget Sound drainages.
Southwest Slope Cascades	- Lower Columbia drainages.

1/ - Preliminary analysis by U. S. Weather Bureau from data furnished by Meteorological Services of Canada and U. S. Weather Bureau.

2/ - Departure from 15-year (1948-62) drainage division average.

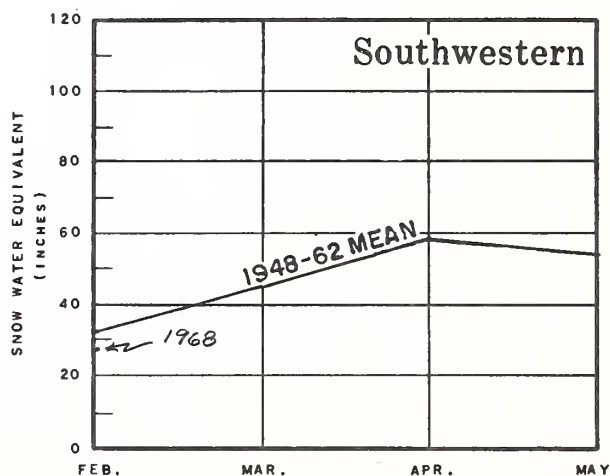
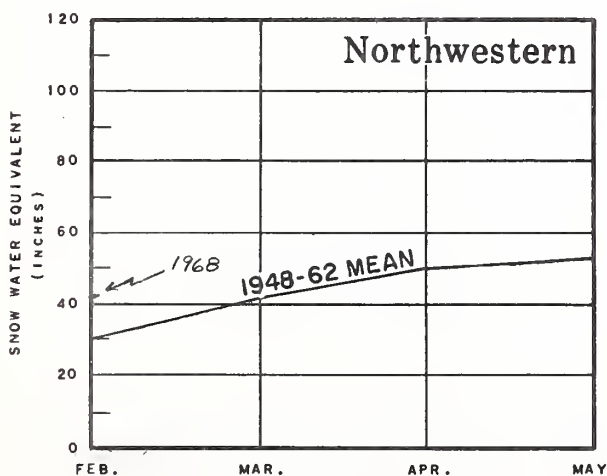
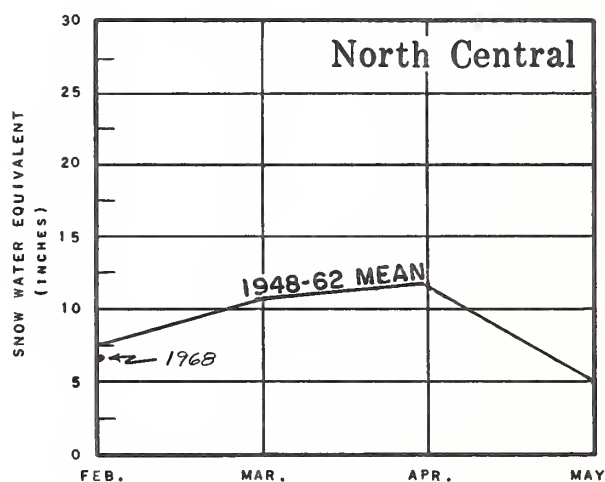
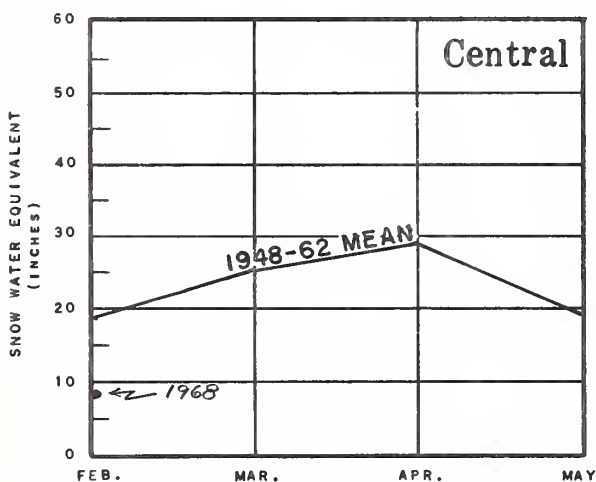
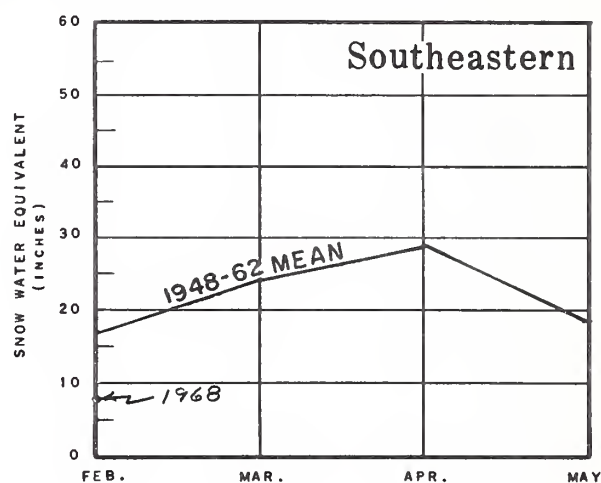
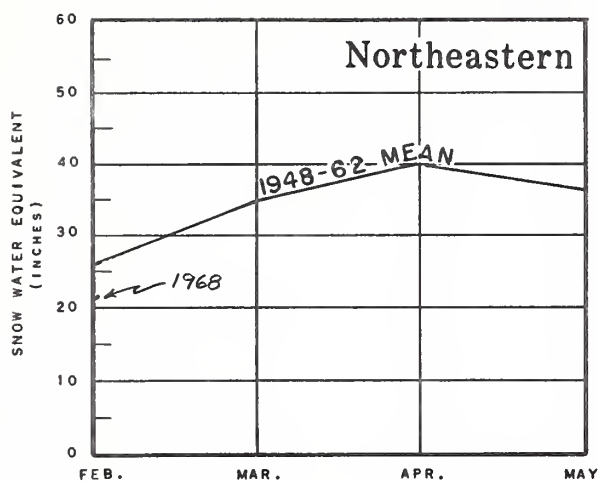




# WASHINGTON SNOW COVER

1968

## DRAINAGE AREAS

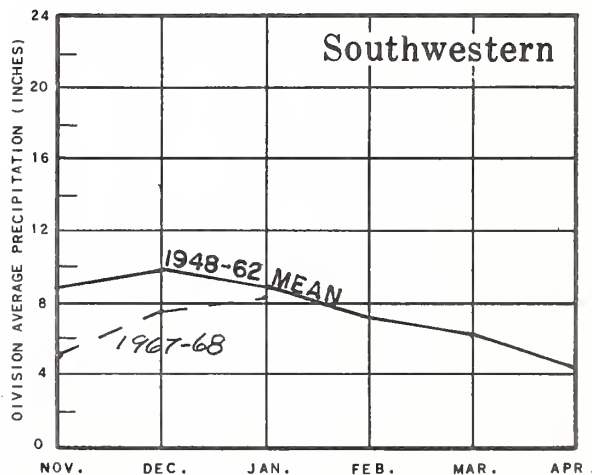
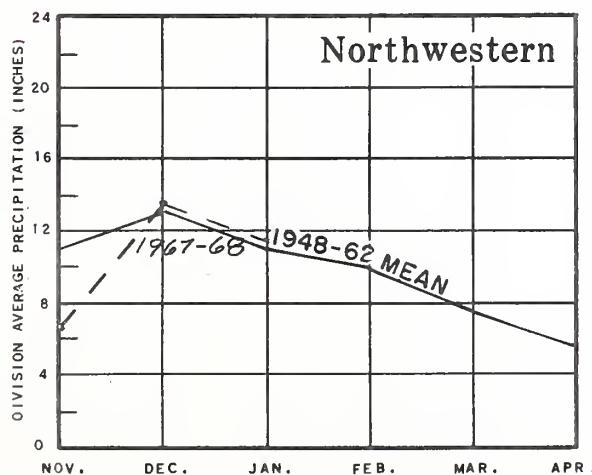
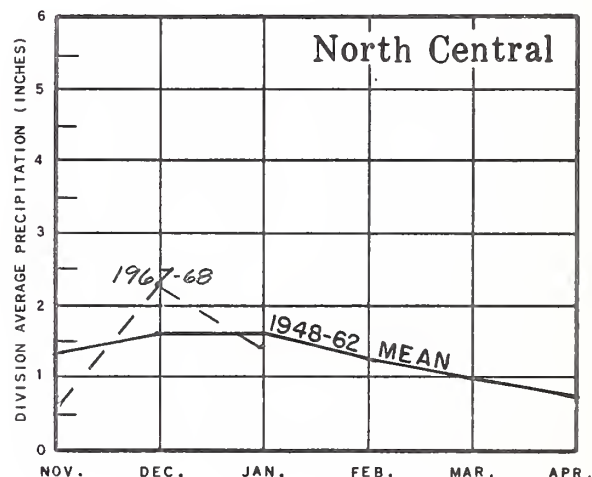
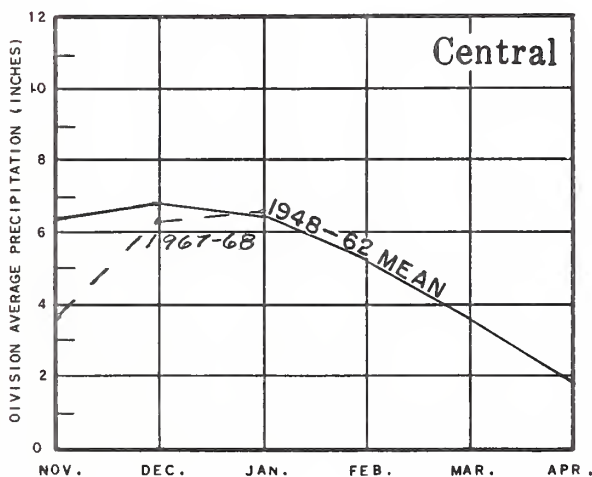
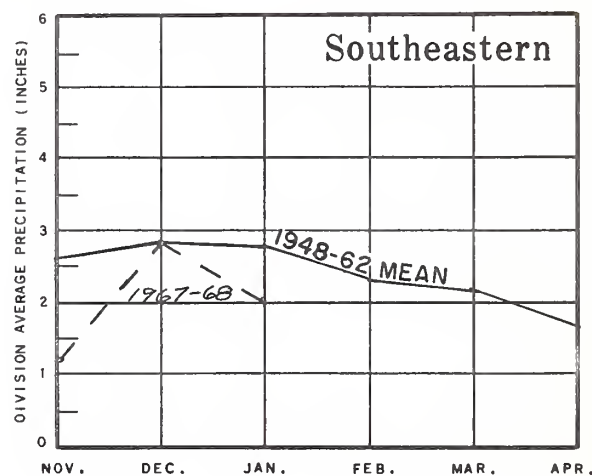
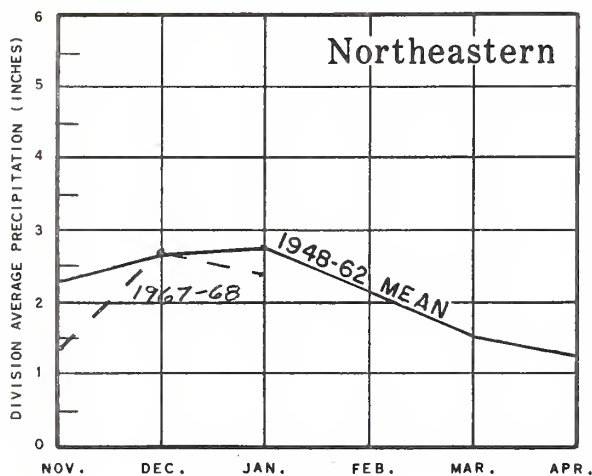




# WASHINGTON VALLEY PRECIPITATION

1967-1968

## DRAINAGE AREAS

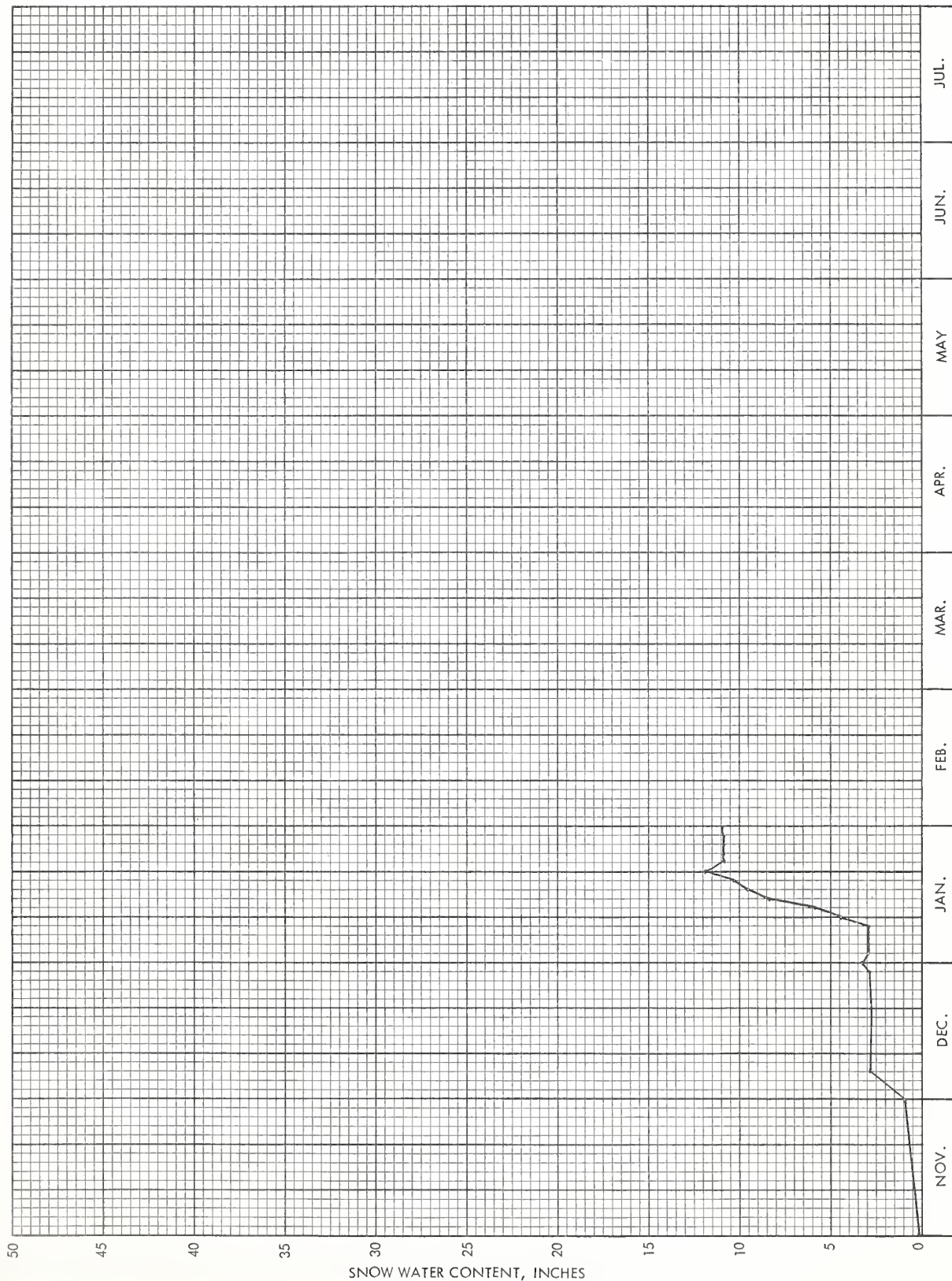




# SNOW PILLOW DATA

Berne-Mill Creek

Sec. 13 T. 26N R. 14E No. 21B41SP Drainage: Wenatchee  
 Lat. 47°46' Long. 121°01' Elev. 3170'





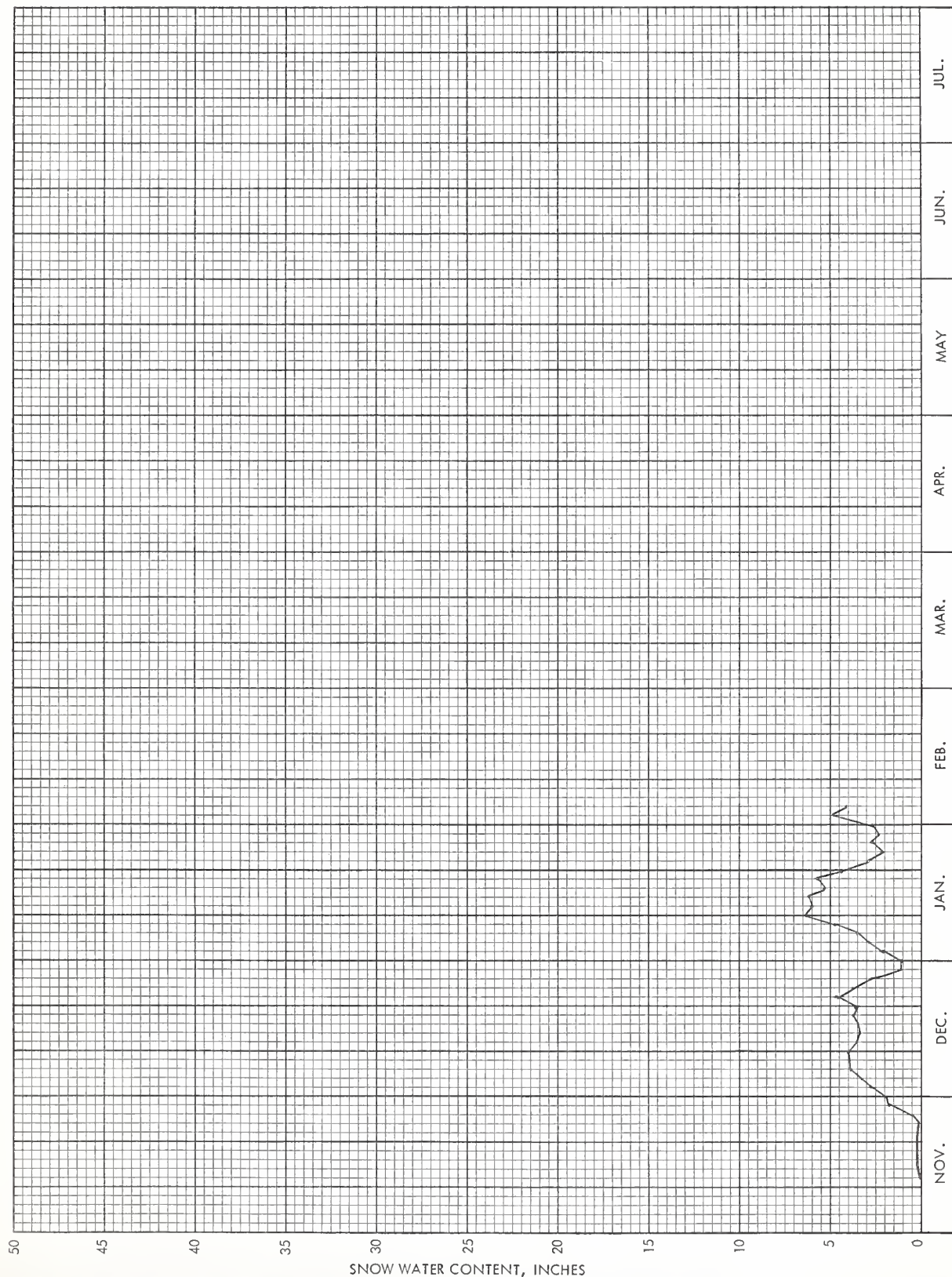


# SNOW PILLOW DATA

Cougar Mountain - FS

Sec. 28 T. 21N R. 9E No. 21B42SP Drainage: Green River

Lat. \_\_\_\_\_ Long. \_\_\_\_\_ Elev. 3200'





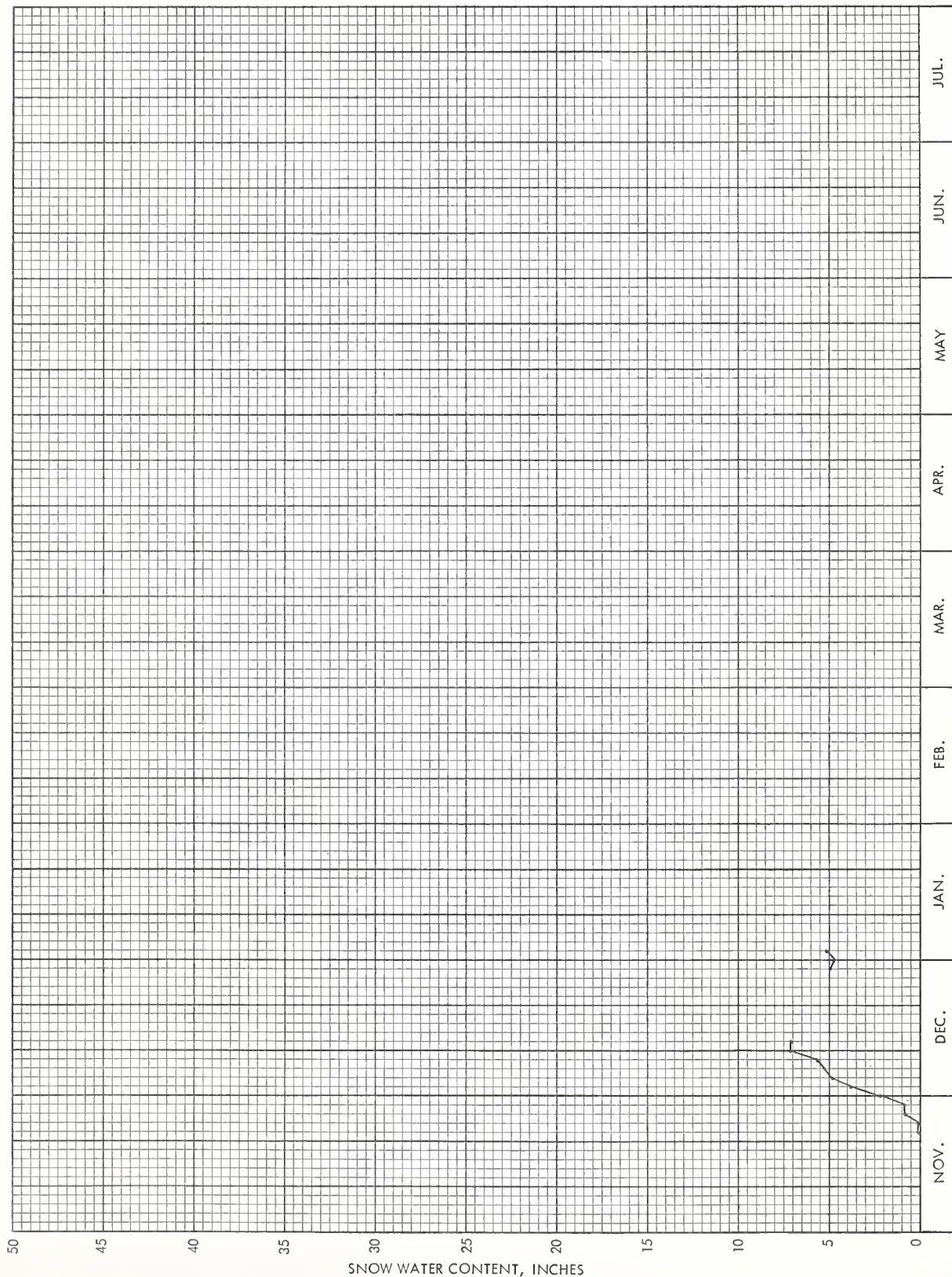


# SNOW PILLOW DATA

EBA Pillow - Snoqualmie Pass

Sec. 4 T. 22N R. 11E No. 21B33SP Drainage: Yakima

Lat. 47°25' Long. 121°25' Elev. 3020

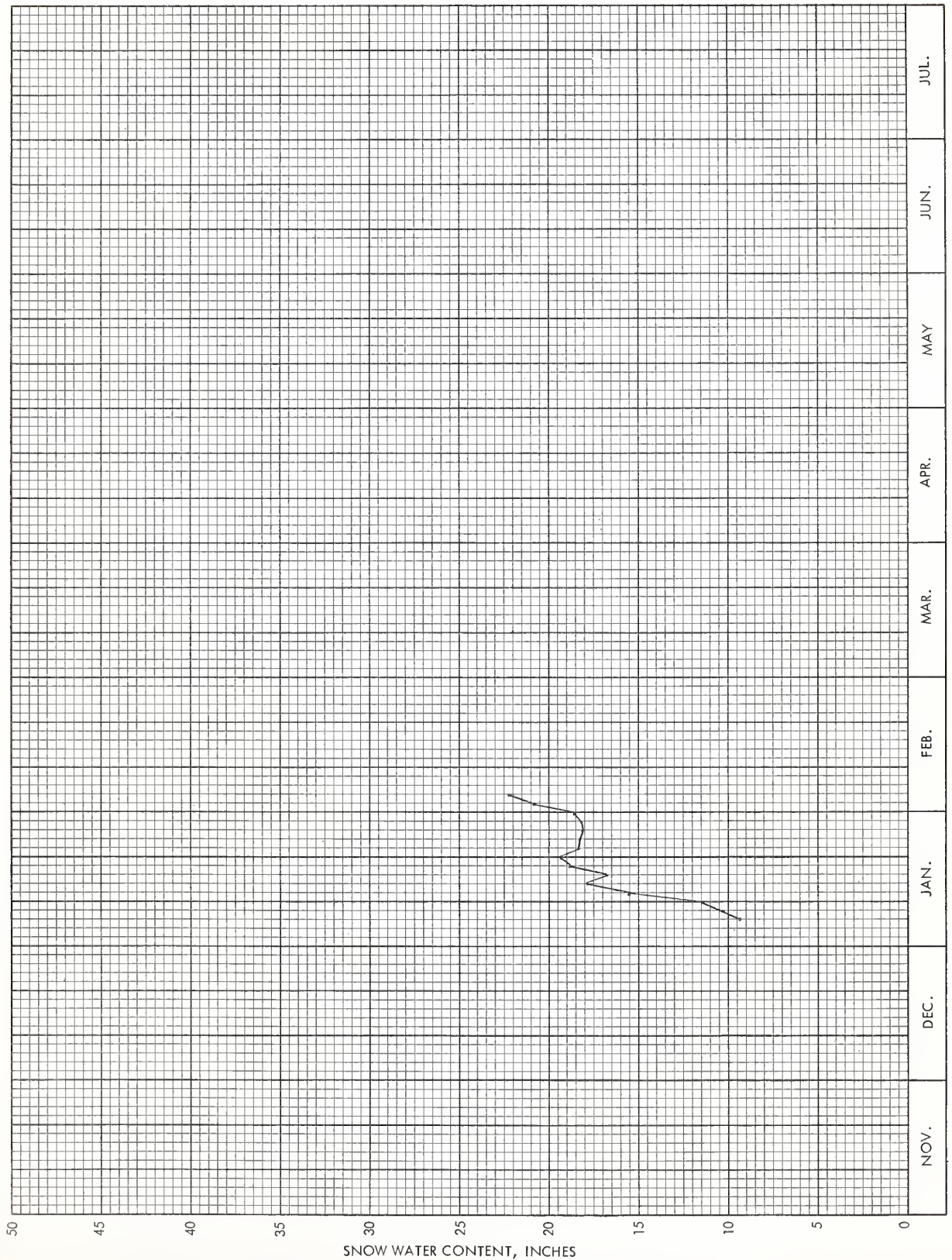




# SNOW PILLOW DATA

Snowshoe Butte

Sec. 14 T. 20N R. 11E No. 21B43SP Drainage: Green River  
 Lat. \_\_\_\_\_ Long. \_\_\_\_\_ Elev. 5000'





## APPENDIX 1

## SNOW DATA TO FEBRUARY 1, 1968

## SNOW

DRAINAGE BASIN and SNOW COURSE			1968			PAST RECORD		
			Date of Survey	Snow Depth (in.)	Water Content (in.)	Water Content (in.)		
Name	No.	Elev.				1967	1966	1948-62 Avg.

U P P E R C O L U M B I A D R A I N A G EPEND OREILLE RIVER

Benton Meadow	16A2	2344	1/3	12	3.6	2.2	5.3	3.4
			1/31	28	5.6	3.0	6.7	5.6
Benton Spring	16A3	4900	12/30	23	6.2	6.6	9.1	9.3
			1/30	39	10.7	16.9	14.1	14.7
#Chewelah	17A4	4925	1/29	35	11.1	11.5	16.9	--
Lookout	15B2	5250	12/28	45	11.8	15.6	12.5	17.6*
			1/31	70	21.0	29.2	21.6	26.4
Nelson	Canada	3050	1/31	48	11.7	13.2	13.9	12.0
Schweitzer Bowl	16A6	4500	12/29	36	10.7	15.3	9.3	--
			1/26	50	16.7	28.5	21.3	--
Schweitzer Ridge	16A5	6100	12/29	49	15.7	23.0	13.2	--
			1/26	73	22.7	39.2	29.2	--
Winchester Creek	17A3	2970	1/29	34	8.8	6.5	9.8	9.9*

KETTLE RIVER

Boulder Road	18A2	1450	10/27	0	0.0	0.0	0.0	--
			11/13	0	0.0	0.0	0.0	--
			11/27	0	0.0	0.0	0.0	--
			12/12	14	2.6	0.0	0.0	--
			12/27	16	4.0	0.0	3.4	2.2*
			1/12	22	4.6	1.6	4.4	3.6*
			1/29	22	5.4	2.0	5.6	4.3*
Big White Mountain	Canada	5500	1/30	48	14.1	18.9	--	--

# Not located directly on this drainage

\* Adjusted 1948-62 average







## APPENDIX 2

## SNOW

DRAINAGE BASIN and SNOW COURSE			1968			PAST RECORD		
			Date of Survey	Snow Depth (in.)	Water Content (in.)	Water Content (in.)		
Name	No.	Elev.				1967	1966	1948-62 Avg.

KETTLE RIVER (Cont.)

Butte Creek	18A3	4070	10/27	0	0.0	0.0	0.0	--
			11/13	0	0.0	0.0	0.0	--
			11/27	0	0.0	1.3	0.6	1.6*
			12/12	19	2.9	4.6	1.7	3.1*
			12/27	24	4.5	4.4	4.0	4.5*
			1/12	26	5.6	6.4	5.5	6.2*
			1/29	33	7.5	6.5	7.4	6.9*
Cabin Creek	18A8	3170	10/27	0	0.0	0.0	0.0	--
			11/13	0	0.0	0.0	0.0	--
			11/27	0	0.0	0.0	0.0	1.1*
			12/12	16	2.8	3.0	1.0	2.4*
			12/27	21	4.3	3.3	3.5	4.2*
			1/12	26	5.1	4.8	5.0	5.5*
			1/29	29	6.3	5.3	5.6	6.0*
Carmi	Canada	4100	Late Report			6.7	3.5	--
Farron	Canada	4000	1/29	35	8.3	11.6	10.7	10.1
Goat Creek	18A4	3595	10/27	0	0.0	0.0	0.0	--
			11/13	0	0.0	0.0	0.0	--
			11/27	0	0.0	0.0	0.0	1.0*
			12/12	17	2.8	3.0	0.6	2.1*
			12/27	21	4.6	2.4	3.5	3.7*
			1/12	24	5.1	4.4	4.7	4.9*
			1/29	28	6.0	5.0	5.5	5.5*
Lower Trapping Creek	Canada	3050	1/30	16	4.1	5.1	3.6	--
#Monashee Pass	Canada	4500	1/25	39	11.1	11.8	10.9	9.8**
Snow Caps Creek	18A5	2150	10/27	0	0.0	0.0	0.0	--
			11/13	0	0.0	0.0	0.0	--
			11/27	0	0.0	0.0	0.0	--
			12/12	14	2.8	0.0	0.0	--
			12/27	16	4.0	0.0	3.0	2.3*
			1/12	23	4.4	1.5	4.3	3.5*
			1/29	22	5.0	2.0	4.8	4.3*

# Not located directly on this drainage

\* Adjusted 1948-62 average

\*\* Average for years of record



## APPENDIX 3

## SNOW

DRAINAGE BASIN and SNOW COURSE			1968			PAST RECORD		
			Date of Survey	Snow Depth (in.)	Water Content (in.)	Water Content (in.)		
Name	No.	Elev.				1967	1966	1948-62 Avg.

KETTLE RIVER (Cont.)

Snow Caps Trail	18A6	2720	10/27	0	0.0	0.0	0.0	--
			11/13	0	0.0	0.0	0.0	--
			11/27	0	0.0	0.0	0.0	--
			12/12	14	2.6	1.7	0.5	1.7*
			12/27	19	3.9	1.3	3.1	3.0*
			1/12	23	4.5	2.4	4.4	4.0*
			1/29	26	5.6	3.5	5.2	4.9*
Summit G. S.	18A7	4600	10/27	0	0.0	0.0	0.0	--
			11/13	0	0.0	0.0	0.0	--
			11/27	0	0.0	1.6	0.8	1.7*
			12/12	14	2.8	3.9	2.1	3.0*
			12/27	21	3.6	4.1	3.6	4.3*
			1/12	22	4.3	6.1	5.4	5.9*
			1/29	27	5.6	6.3	6.5	6.7*
Upper Trapping Cr.	Canada	5500	1/30	25	6.0	9.0	5.6	--

COLVILLE RIVER

Baird	17A6	3215	1/26	18	5.0	4.6	6.1	5.9*
Carlson	18A9	2885	1/30	18	4.2	2.3	5.1	4.3*
Chewelah	17A4	4925	1/29	35	11.1	11.5	16.9	14.1*
Stranger Mountain	17A5	4990	2/1	46	11.9	6.6	13.0	10.5*
Togo	18A10	3370	1/30	38	10.6	3.1	11.1	9.1*

SPOKANE RIVER

Forty-nine Meadows	15B3A	5000	Not Measured			26.4	21.3	--
4th of July Summit	16B3	3100	12/29	12	3.0	2.0	6.6	--
			2/1	23	5.2	4.8	8.3	--
Granite Peak	15B13A	6000	Not Measured			33.1	28.3	--
#Lookout	15B2	5250	12/28	45	11.8	15.6	12.5	17.6*
			1/31	70	21.0	29.2	21.6	26.4
Lost Lake	15B14A	6000	Not Measured			40.7	28.0	--
Medicine Ridge	15B4A	6150	Not Measured			40.3	35.0	--
Outlaw Creek	15B12A	3750	Not Measured			11.5	12.4	--
Sherwin	16C1	3200	2/2	27	7.3	10.0	10.0	--

# Not located directly on this drainage

\* Adjusted 1948-62 average



## APPENDIX 4

## SNOW

DRAINAGE BASIN and SNOW COURSE			1968			PAST RECORD		
			Date of Survey	Snow Depth (in.)	Water Content (in.)	Water Content (in.)		
Name	No.	Elev.				1967	1966	1948-62 Avg.

OKANOGAN RIVER

Aberdeen Lake	Canada	4300	1/30	22	6.0	5.0	6.3	5.0**
Blackwall Mountain	Canada	6250	1/29	76	27.0	26.8	25.2	23.2**
Brookmere	Canada	3200	1/28	22	6.7	7.6	8.0	7.3
Carrs Landing #1	Canada	2250	1/27	0	0.0	--	--	--
Carrs Landing #2	Canada	3200	1/27	11	2.5	3.7	--	--
Copper Mountain	Canada	4300	1/28	5	1.5	4.3	--	5.2**
Enderby	Canada	6250	1/25	90	24.3	34.4	20.9	--
Hamilton Hill	Canada	4900	1/27	30	9.1	13.9	13.1	10.0**
#Harts Pass	20A5A	6500	2/5	125	42.0	36.3	26.0	31.1*
#Horseshoe Basin +	19A5a	7000	1/28	40	8.4	14.9	--	--
Isintok Lake	Canada	6300	1/31	22	5.4	7.4	4.3	--
Lost Horse Mountain	Canada	6300	Late Report			8.2	4.6	6.0**
#Loup Loup	19A7	4650	1/29	32	7.9	7.5	6.1	7.4*
McCulloch	Canada	4200	1/29	21	4.8	5.8	4.6	5.0
Missezula Mountain	Canada	5100	Late Report			9.2	7.5	6.2**
Mission Creek	Canada	6000	1/29	49	15.0	17.7	10.5	12.7**
Monashee Pass	Canada	4500	1/25	39	11.1	11.8	10.9	9.8**
Mount Kobau	Canada	5950	1/28	34	10.0	12.0	--	--
Mutton Creek No. 1	19A1	5700	1/29	35	10.3	16.0	9.7	9.6*
Mutton Creek No. 2	19A4	6000	1/29	38	9.2	16.6	9.4	10.0*
New Copper Mountain	Canada	4300	1/28	8	3.0	5.1	5.6	5.3**
Paysayten +	20A28a	4300	1/28	24	7.7	17.8	--	12.3*
Postill Lake	Canada	4500	1/30	25	6.6	7.0	5.8	5.8**
Rusty Creek	19A3	4000	1/29	26	5.5	5.6	6.7	6.0
Salmon Meadows	19A2	4500	1/29	33	6.9	6.4	6.0	7.7*
Silver Star Mountain	Canada	6050	1/31	70	24.3	25.7	16.6	16.1**
Summerland Reservoir	Canada	4200	1/27	29	6.8	8.8	6.5	--
Touts Coulee	19A6	2845	1/29	16	3.4	2.3	3.1	--
Trout Creek	Canada	4700	1/30	19	4.3	5.6	5.5	5.7

METHOW RIVER

Billy Goat Pass +	20A10a	6409	1/28	71	22.7	37.6	--	22.9*
Dollar Watch +	20A29a	7000	1/28	62	19.8	25.7	--	19.5*
Harts Pass	20A5A	6500	2/5	125	42.0	36.3	26.0	31.1*
Horseshoe Basin +	19A5A	7000	1/29	40	8.4	14.9	--	10.5*
Loup Loup	19A7	4650	1/29	32	7.9	7.5	6.1	7.4*
#Mutton Creek No. 1	19A1	5700	1/29	35	10.3	16.0	9.7	9.6*
#Mutton Creek No. 2	19A4	6000	1/29	38	9.2	16.6	9.4	10.0*

# Not directly on this drainage

\* Adjusted 1948-62 average

\*\* Average for years of record

+ Snow water equivalent estimated from aerial stadia observation



## APPENDIX 5

## SNOW

DRAINAGE BASIN and SNOW COURSE			1968			PAST RECORD		
			Date of Survey	Snow Depth (in.)	Water Content (in.)	Water Content (in.)		
Name	No.	Elev.				1967	1966	1948-62 Avg.

METHOW RIVER (Cont.)

#Rusty Creek	19A3	4000	1/29	26	5.5	5.6	6.7	6.0
#Salmon Meadows	19A2	4500	1/29	33	6.9	6.4	6.0	7.7*
#War Creek Pass +	20A31a	6500	2/1	103	29.9	--	--	--

CHELAN LAKE BASIN

Cloudy Pass +	20A22a	6500	2/3	86	24.9	36.5	--	29.7*
Little Meadows +	20A24a	5275	2/3	103	29.9	38.4	--	31.6*
Lyman Lake	20A23A	5900	Late Report			50.6	--	39.9*
Park Creek Ridge	20A12A	4600	1/28	89	18.8	46.7	--	37.0*
Petersons +	20A16a	3730	2/1	66	19.1	32.6	--	--
Rainy Pass	20A9	4780	2/5	102	29.7	36.0	24.3	29.8*
Safety Harbor	20A30A	6300	Late Report			20.8	--	--
War Creek Pass +	20A31a	6500	2/1	103	29.9	--	--	--
Park Creek Flat +	20A13a	2220	1/28	80	23.2	27.5	--	30.2

ENTIAT RIVER

Brief	20B19	1600	1/27	20	6.0	5.0	6.8	7.2*
Entiat Meadows +	20A33a	4800	2/5	138	41.4	26.4	--	--
Entiat River Trail +	20A34a	3150	2/5	60	18.0	13.7	--	--
Fox Camp +	20A36a	6510	2/5	152	45.6	31.2	--	--
Pope Ridge	20B20	4300	1/29	37	11.0	11.4	14.4	--
Pugh Ridge +	20A32a	6400	2/5	97	29.1	16.6	--	--
Snow Brushy +	20A35a	3850	2/5	111	33.3	18.9	--	--
Tommy Creek +	20B21a	5300	2/5	68	20.4	16.0	--	--

WENATCHEE RIVER

Berne-Mill Creek	21B23	2925	11/15	0	0.0	1.8	0.0	1.4*
			11/29	11	1.8	2.5	1.4	5.4*
			12/13	18	5.5	7.7	2.0	8.3*
			12/28	18	5.9	7.8	5.0	13.0*
			1/12	42	9.9	13.0	15.1	19.4*
			1/30	41	12.9	18.8	17.8	23.6*
Berne-Mill Creek New	21B41SP	3240	11/15	0	0.0	2.3	--	--
			11/29	11	1.3	2.0	--	--
			12/28	10	3.5	6.8	--	--
			1/30	32	9.9	17.2	--	--

# Not directly on this drainage

\* Adjusted 1948-62 average

+ Snow water equivalent estimated from aerial stadia observation





## APPENDIX 6

## SNOW

DRAINAGE BASIN and SNOW COURSE			1968			PAST RECORD		
			Date of Survey	Snow Depth (in.)	Water Content (in.)	Water Content (in.)		
Name	No.	Elev.				1967	1966	1948-62 Avg.
<u>WENATCHEE RIVER (Cont.)</u>								
Blewett Pass No. 2	20B2	4270	12/29	12	4.9	1.9	7.6	8.1*
			2/5	33	10.8	8.2	12.7	12.4*
Chiwaukum G. S.	20B16	1810	11/15	0	0.0	0.8	0.0	--
			11/29	4	0.5	0.0	0.2	2.0*
			12/15	15	3.1	2.0	0.4	3.1*
			12/28	15	3.4	1.6	2.3	5.2*
			1/12	24	5.0	3.8	7.8	8.6*
			1/30	32	8.2	6.4	8.4	10.3*
Lake Wenatchee	20B5	1970	11/15	0	0.0	1.0	0.0	--
			11/29	3	0.5	0.0	0.6	--
			12/15	12	2.5	2.1	1.1	4.2*
			12/28	14	4.3	2.1	3.1	6.6*
			1/12	27	7.0	5.7	9.9	11.0*
			1/30	30	8.7	9.3	10.6	13.8*
Leavenworth R. S.	20B17	1127	10/30	0	0.0	0.0	0.0	--
			11/13	0	0.0	0.3	0.0	--
			12/1	2	0.7	0.0	0.5	--
			12/13	5	1.8	1.1	0.0	--
			12/28	9	2.5	0.0	3.0	3.2*
			1/16	19	5.0	0.0	7.3	4.5*
			1/30	22	5.2	2.0	7.3	5.7*
#Lyman Lake	20A23A	5900	Late Report			36.8	--	--
Merritt	20B18	2140	11/14	0	0.0	0.5	0.0	--
			11/29	6	1.0	0.5	0.5	3.2*
			12/13	15	3.6	3.3	2.0	5.3*
			12/28	13	4.2	3.5	4.2	9.1*
			1/12	27	6.2	4.9	12.0	13.6*
			1/30	31	8.8	9.2	13.4	16.0*
Stevens Pass (South)	21B1	4070	10/30	8	2.4	--	0.0	--
			11/15	0	0.0	3.4	0.0	--
			11/29	18	3.2	5.2	4.4	11.6*
			12/13	31	8.8	13.9	7.8	15.2*
			12/28	29	10.5	15.2	13.2	21.8*
			1/12	67	15.6	24.4	28.5	27.5*
			1/30	62	18.0	33.7	31.2	34.9

# Not directly on this drainage

\* Adjusted 1948-62 average



## APPENDIX 7

## SNOW

DRAINAGE BASIN and SNOW COURSE			1968			PAST RECORD		
			Date of Survey	Snow Depth (in.)	Water Content (in.)	Water Content (in.)		
Name	No.	Elev.				1967	1966	1948-62 Avg.

WENATCHEE RIVER (Cont.)

Stevens Pass Sand Shed 21B45	3700	11/29	12	1.7	New Course
		12/13	22	6.0	
		12/28	16	5.2	
		1/12	43	10.2	
		1/30	42	12.3	

CLOCKUM CREEK

Clockum Creek	20B22	5300	Late Report		New Course
Clockum Creek No. 2	20B23	4300	Late Report		New Course

SQUILCHUCK CREEK

Beehive Springs	20B3	4400	1/31	35	7.2	2.9	7.7	5.5*
Scout-A-Vista	20B4	3400	1/31	45	8.5	3.0	7.0	6.1*

STEMILT CREEK

Jump-Off	20B8	4450	2/1	34	8.0	2.4	8.0	5.4*
Stemilt Slide	20B6	5000	1/30	48	10.9	7.7	12.0	11.3
Upper Wheeler	20B7	4400	1/30	41	8.7	2.6	9.0	7.3*

YAKIMA RIVER

#Ahtanum R. S.	21C11	3100	12/27	11	3.1	1.8	3.3	4.3*
			1/28	23	4.9	2.9	8.1	6.5*
#Blewett Pass No. 2	20B2	4270	12/29	12	4.9	1.9	7.6	8.1*
			2/5	33	10.8	8.2	12.7	12.4*
Bumping Lake (Old)	21C8	3450	12/1	5	0.6	--	0.6	4.6*
			12/20	14	3.2	3.3	--	4.8*
			1/2	11	3.5	3.8	6.4	7.8
			1/17	27	8.2	4.7	14.2	12.2*
			2/5	34	9.2	10.2	14.4	13.5
Bumping Lake (New)	21C36	3400	12/1	8	1.0	--	--	--
			12/20	18	3.9	4.8	--	--
			1/2	17	5.1	4.8	--	--
			1/18	37	10.0	6.5	--	--
			2/5	42	12.1	14.1	--	--

# Not directly on this drainage

\* Adjusted 1948-62 average



## APPENDIX 8

## SNOW

DRAINAGE BASIN and SNOW COURSE			1968			PAST RECORD		
			Date of Survey	Snow Depth (In.)	Water Content (In.)	Water Content (In.)		
Name	No.	Elev.				1967	1966	1948-62 Avg.
<u>YAKIMA RIVER (Cont.)</u>								
Clockum Pass	20B9	5370	1/29	45	10.7	9.7	--	--
Cooke Creek	20B10	4123	1/29	16	2.9	1.8	7.3	--
#Green Lake	21C10	6000	1/26	57	16.2	--	--	--
Grouse Camp	20B11	5385	1/30	46	10.9	10.2	12.6	8.6*
High Creek	20B12	2930	1/30	23	4.6	0.0	6.9	5.3*
Lake Cle Elum	21B14M	2200	1/2	0	0.0	0.0	2.0	4.9
			1/9	12	3.5	--	--	--
			1/21	6	2.0	2.5	7.8	6.7*
			1/30	6	0.5	3.0	8.4	8.9
Manashtash	20C1	3935	1/31	15	3.3	2.8	4.5	3.7*
Morse Lake	21C17	5400	1/30	98	31.8	51.1	32.4	39.8*
Nanum	20B13	3875	1/30	30	6.5	3.1	10.3	8.0*
#Olallie Meadows	21B2	3625	2/5	50	19.1	28.1	33.0	30.1*
#Satus Pass	20D1	4030	1/31	13	4.3	4.3	17.1	--
Snoqualmie Pass	21B33SP	3020	1/3	17	5.9	8.4	--	--
#Stampede Pass	21B10	3000	11/30	18	1.6	5.2	2.2	8.9*
			12/7	33	4.9	8.5	3.4	--
			12/18	28	6.4	7.5	--	--
			1/1	24	8.7	14.5	12.1	20.7
			1/11	70	11.2	15.8	14.1	--
			1/18	54	16.8	26.1	16.7	--
			2/1	49	17.9	27.6	18.0	33.6*
Trail Creek	20B14	3360	1/29	9	1.1	0.0	5.4	--
Tunnel Avenue	21B8	2450	11/30	15	1.0	--	--	3.5*
			12/11	18	2.6	2.8	--	--
			12/20	18	3.7	2.0	--	--
			12/30	13	3.4	3.4	5.1	10.0
			1/10	28	5.2	5.3	--	--
			1/21	24	7.2	9.1	16.4	--
			1/30	34	8.1	10.7	17.3	18.7
Walters Flat	20B15	3360	1/30	25	6.2	1.8	8.1	6.2*
White Pass (E. Side)	21C28	4500	12/19	18	4.5	--	--	--
			1/2	11	3.9	7.9	--	9.8*
			1/16	20	6.4	11.7	13.4	14.6*
			1/31	38	9.4	15.6	16.1	18.5*

# Not directly on this drainage

\* Adjusted 1948-62 average





## APPENDIX 9

## SNOW

DRAINAGE BASIN and SNOW COURSE			1968			PAST RECORD		
			Date of Survey	Snow Depth (in.)	Water Content (in.)	Water Content (in.)		
Name	No.	Elev.				1967	1966	1948-62 Avg.

YAKIMA RIVER (Cont.)

White Pass (L. Lake)	21C27	4500	12/19	21	5.0	--	--	--
			1/2	5	1.1	12.6	11.8	14.6*
			1/16	21	6.7	14.1	--	--
			2/6	31	10.6	21.4	21.6	23.0*

AHTANUM CREEK

Ahtanum R. S.	21C11	3100	12/27	11	3.1	1.8	3.3	4.3*
			1/28	23	4.9	2.9	8.1	6.5*
Green Lake	21C10	6000	1/26	57	16.2	--	--	--

ASOTIN CREEK

Spruce Springs	17C4	5700	1/29	34	11.2	14.8	15.7	--
----------------	------	------	------	----	------	------	------	----

MILL CREEK

Homestead	17C1	4030	1/30	9	2.8	5.8	9.4	7.0*
Martin Springs	17C2	4400	1/30	13	3.7	9.1	12.0	8.3*
Walla Walla Div.	18D13	2400	2/1	0	0.0	0.0	0.0	0.0*

KLICKITAT RIVER

Satus Pass	20D1	4030	1/31	13	4.3	4.3	17.1	6.9*
West Fork Cabin	21C15	3000	1/3	14	5.1	--	--	--
						4.2	14.7	8.3*

WHITE SALMON RIVER

Cultus Creek	21C12	4000	12/30	36	13.2	18.1	--	17.1*
						36.3	36.2	30.1*
#Surprise Lakes	21C13A	4250	12/30	38	14.3	18.2	23.8	21.0*
						37.7	37.8	32.8*
Old Man Pass	21D19	3100	12/31	23	8.6	1.9	--	--
				42	15.9	10.9	27.8	--

LEWIS RIVER

Blue Lake +	21C22a	4800	12/30	64	24.3	36.4	41.0	33.9*
			2/5	136	53.0	64.0	57.3	61.9*

# Not located directly on this drainage

\* Adjusted 1948-62 average

+ Snow water equivalent estimated from aerial stadia observation



## APPENDIX 10

## SNOW

DRAINAGE BASIN and SNOW COURSE			1968			PAST RECORD		
			Date of Survey	Snow Depth (in.)	Water Content (in.)	Water Content (in.)		
Name	No.	Elev.				1967	1966	1948-62 Avg.

LEWIS RIVER (Cont.)

Bob's Trail	21C21	2200	12/30	19	6.6	2.4	16.6	6.5*
			2/6	32	12.4	12.3	20.6	10.8*
Calamity Ridge +	22D1a	2500	Not Measured			0.0	7.8	--
			2/5	8	3.2	0.0	12.4	--
Council Pass +	21C18a	4200	12/30	27	9.5	--	21.8	18.4*
			2/5	66	24.4	29.3	33.3	26.2*
#Cultus Creek	21C12	4000	12/30	36	13.2	18.1	--	17.1*
			2/6	75	27.4	36.3	36.2	30.1*
Divide Meadow +	21C29a	5600	12/30	38	13.7	--	24.7	28.0*
			2/5	81	30.0	42.6	36.3	42.4*
Grand Meadow	21C25	3500	12/30	24	8.2	2.2	15.1	10.1*
			2/5	52	16.2	17.0	22.3	18.2*
Lone Pine Shelter	21C26	3800	1/3	50	17.3	17.0	--	--
			2/6	83	31.6	33.2	36.4	29.6*
Marble Mountain +	22C5a	3200	12/29	28	11.2	3.3	16.7	--
			2/5	48	22.1	16.8	30.3	--
#Mosquito Meadows	21C19	4100	1/3	51	18.6	17.1	28.7	--
			2/6	88	33.9	34.9	36.9	--
New Muddy River	22C6	1400	12/31	11	4.1	1.9	7.2	--
			2/6	20	8.4	2.4	20.0	--
Old Man Pass	21D19	3100	12/31	23	8.6	1.9	--	--
			2/5	42	15.9	10.9	27.8	11.6*
Plains of Abraham +	22C1a	4400	12/29	47	17.8	30.1	--	23.2*
			2/5	110	42.9	52.5	--	39.4*
Smith Creek Road	22C4	2100	12/29	26	11.9	--	11.0	6.0*
			2/5	49	20.3	15.1	25.7	12.8*
Spencer Meadow +	21C20a	3400	12/29	34	12.6	4.9	19.2	9.4*
			2/5	46	18.4	17.5	29.6	9.4*
Surprise Lakes	21C13A	4250	12/30	38	14.3	18.2	23.8	21.0*
			2/5	75	27.4	37.7	37.8	32.8*
Table Mountain +	21C24a	4200	12/30	42	14.7	18.5	25.5	23.5*
			2/5	76	28.1	34.6	36.8	34.0*
Timbered Peak +	21D18a	3000	12/30	22	8.1	1.5	14.3	--
			2/5	24	9.6	10.0	24.6	13.1*

COWLITZ RIVER

Cayuse Pass	21C6	5300	1/2	72	26.6	38.2	25.6	--
			2/5	133	46.6	67.1	53.3	60.3*

# Not located directly on this drainage

\* Adjusted 1948-62 average

+ Snow water equivalent estimated from aerial stadia observation



## APPENDIX 11

## SNOW

DRAINAGE BASIN and SNOW COURSE			1968			PAST RECORD		
			Date of Survey	Snow Depth (In.)	Water Content (In.)	Water Content (In.)		
Name	Na.	Elev.				1967	1966	1948-62 Avg.

COWLITZ RIVER (Cont.)

Mosquito Meadows	21C19	4100	1/3	51	18.6	17.1	28.7	--
			2/6	88	33.9	34.9	36.9	--
Ohanapecosh	21C31	2870	Not Measured			3.3	--	--
			2/6	23	7.2	10.8	16.0	14.5*
Packwood Lake	21C31	2870	1/4	7	2.0	3.3	9.5	--
			2/6	15	5.5	8.0	13.6	10.0*
Pigtail Peak	21C33	5900	12/19	60	17.3	--	--	--
			1/2	55	20.0	28.4	26.7	--
			1/16	76	27.1	--	--	--
			2/6	100	34.8	46.3	40.2	--
Plains of Abraham +	22C1a	4400	12/29	47	17.8	30.1	--	23.2*
			2/5	110	42.9	52.5	--	39.4*
Potato Hill	21C14	4500	1/3	30	10.2	10.5	--	--
			2/6	47	15.4	22.2	26.1	19.7*
#White Pass (E. Side)	21C28	4500	12/19	18	4.5	--	--	--
			1/2	11	3.9	7.9	--	--
			1/16	20	6.4	11.7	13.4	14.6*
			1/31	38	9.4	15.6	16.1	18.5
#White Pass (L. Lake)	21C27	4500	1/2	5	1.1	12.6	11.8	--
			1/16	21	6.7	14.1	--	--
			2/6	31	10.6	21.4	21.6	--
Willame Creek	21C30	3250	1/2	21	6.3	9.6	--	--
			2/6	41	12.6	22.7	24.6	22.8*

PUGET SOUND DRAINAGENISQUALLY RIVER

Ghost Forest	21C4	4550	1/2	27	9.3	10.2	12.1	--
			1/31	60	15.0	37.5	31.3	30.6*
Longmire	21C3	2760	1/2	1	0.3	0.2	2.0	--
			1/31	21	3.0	8.6	8.8	9.5*
New Paradise Park	21C35	5500	1/2	46	17.8	20.5	18.4	--
			1/31	76	25.3	59.8	39.2	--
Stem Glade	21C1	5050	1/2	47	16.9	24.3	17.4	--
			1/31	89	26.1	60.4	39.8	48.4*

# Not located directly on this drainage

\* Adjusted 1948-62 average

+ Snow water equivalent estimated from aerial stadia observation





# APPENDIX 12

## SNOW

DRAINAGE BASIN and SNOW COURSE			1968			PAST RECORD		
			Date of Survey	Snow Depth (in.)	Water Content (in.)	Water Content (in.)		
Name	No.	Elev.				1967	1966	1948-62 Avg.

### WHITE RIVER

#Cayuse Pass	21C6	5300	1/2	72	26.5	38.2	25.6	--
			2/5	133	46.6	67.1	53.3	60.3*
White River Campground	21C34	4000	Not Measured			7.3	10.3	--
			Not Measured			20.6	21.8	--

### GREEN RIVER

Airstrip	21B24	1800	12/1	6	0.8	0.0	0.0	--
			12/28	0	0.0	0.0	2.2	--
			2/5	0	0.0	1.2	7.2	--
Charley Creek	21B25	1200	11/28	0	0.0	0.0	0.0	--
			12/28	0	0.0	0.0	3.1	--
			2/5	0	0.0	0.0	4.3	--
Grass Mtn. No. 1	21B26	4000	12/1	4	0.6	0.0	2.4	--
			1/2	6	1.3	0.7	7.1	7.9*
			2/5	9	3.8	12.5	17.0	14.5*
Grass Mtn. No. 2	21B27	2900	11/28	0	0.0	0.0	1.3	3.0*
			12/28	0	0.0	1.7	--	7.4*
			2/5	21	8.0	--	17.8	14.0*
Grass Mtn. No. 3	21B28	2100	11/28	0	0.0	0.0	0.0	--
			12/28	0	0.0	0.0	--	--
			2/5	0	0.0	0.0	6.2	--
Lester Creek	21B29	3100	12/1	8	1.2	0.0	1.6	3.7*
			1/2	18	5.2	3.2	7.1	10.3*
			2/5	35	11.8	13.5	15.6	17.8*
Sawmill Ridge	21B29	4700	12/1	10	1.9	4.3	2.7	8.7*
			1/2	25	7.0	8.6	7.9	16.6*
			2/5	42	15.0	27.9	20.3	30.1*
Stampede Pass	21B10	3000	11/30	18	1.6	5.2	2.2	8.9*
			12/7	33	4.9	8.5	3.4	--
			12/18	28	6.4	7.5	--	--
			1/1	24	8.7	14.5	12.1	20.7*
			1/11	70	11.2	15.8	14.1	--
			1/18	54	16.8	26.1	16.7	--
			2/1	49	17.9	27.6	18.0	33.6*
Twin Camp	21B30	4100	12/1	8	1.8	2.0	1.8	5.7*
			1/2	9	2.1	4.3	6.2	11.7*
			2/5	16	5.8	17.6	14.8	20.9*

# Not located directly on this drainage

\* Adjusted 1948-62 average



## APPENDIX 13

## SNOW

DRAINAGE BASIN and SNOW COURSE			1968			PAST RECORD		
			Date of Survey	Snow Depth (in.)	Water Content (in.)	Water Content (in.)		
Name	No.	Elev.				1967	1966	1948-62 Avg.

SNOQUALMIE RIVER

Olallie Meadows	21B2	3625	2/5	50	19.1	28.1	33.0	30.1*
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SKYKOMISH RIVER

#Stevens Pass (South)	21B1	4070	10/30	8	2.4	--	0.0	--
			11/15	0	0.0	3.4	0.0	--
			11/29	18	3.2	5.2	4.4	11.6*
			12/13	31	8.8	13.9	7.8	15.2*
			12/28	29	10.5	15.2	13.2	21.8*
			1/12	67	15.6	24.4	28.5	27.5*
			1/30	62	18.0	33.7	31.2	34.9
#Stevens Pass Sand Shed	21B45	3700	11/29	12	1.7	New Course		
			12/13	22	6.0			
			12/28	16	5.2			
			1/12	43	10.2			
			1/30	42	12.3			

SKAGIT RIVER

#Cloudy Pass +	20A22a	6500	2/3	86	24.9	36.5	--	29.7*
Devils Park	20A4	5900	2/3	102	34.8	38.0	26.5	31.9*
#Harts Pass	20A5A	6500	2/5	125	42.0	36.3	26.0	31.1*
Klesilkwa	Canada	3700	1/29	15	5.4	9.4	--	10.5**
#Lyman Lake	20A23A	5900	Late Report			50.6	--	39.9*
New Tashme	Canada	2500	1/30	13	3.6	7.0	10.7	--
#Rainy Pass	20A9	4780	2/5	102	29.7	36.0	24.3	29.8*
Quartette Lake	Canada	4000	Not Measured					

BAKER RIVER

Dock Butte +	21A11A	3800	1/28	76	27.7	47.0	45.8	49.7*
Easy Pass +	21A7A	5200	1/28	94	34.3	64.2	52.2	67.2*
Jasper Pass +	21A6A	5400	1/28	144	52.6	81.5	56.0	73.6*
Marten Lake +	21A9A	3600	1/28	96	35.0	65.5	57.4	60.8*
Mt. Blum +	21A18a	5800	1/28	79	28.8	58.8	55.3	--
#Panorama	21A5	4300	1/14	95	40.4	47.4	53.9	51.6*
			1/31	141	51.4	69.6	51.5	63.9*
Rocky Creek	21A12A	2100	1/28	43	15.7	23.2	22.4	19.0*
Schreibers Meadow	21A10A	3400	1/28	48	17.5	46.4	36.8	45.9*
S. F. Thunder Creek	21A14A	2200	1/28	8	2.9	2.4	13.3	5.5*
Watson Lakes	21A8A	4500	1/28	72	26.3	46.3	49.0	49.6*

# Not located directly on this drainage

\*\* Average for years of record

\* Adjusted 1948-62 average

+ Snow water equivalent estimated from aerial stadia observation



# APPENDIX 14

## SNOW

DRAINAGE BASIN and SNOW COURSE			1968			PAST RECORD		
Name	No.	Elev.	Date of Survey	Snow Depth (in.)	Water Content (in.)	Water Content (in.)		
						1967	1966	1948-62 Avg.

### NOOKSACK RIVER

Panorama	21A5	4300	1/14	95	40.4	47.4	53.9	51.6*
			1/31	141	51.4	69.6	51.5	63.9*

### O L Y M P I C P E N I N S U L A

### DUNGENESS RIVER

Deer Park	23B4	5200	1/30	34	12.1	19.9	24.4	18.0*
-----------	------	------	------	----	------	------	------	-------

### MORSE CREEK

Deer Park G. S.	23B13	4850	1/30	25	7.9	11.9	14.8	--
Morse Creek	23B12	5425	Not Measured			31.2	32.6	--
Cox Valley	23B14		2/4	81	27.9	New Course		

### ELWHA RIVER

Hurricane	23B3	4500	1/27	47	14.8	22.1	17.0	--
-----------	------	------	------	----	------	------	------	----

### SKOKOMISH RIVER

Black & White	23B7	4200	1/2	46	18.0	16.8	--	--
			2/5	84	31.8	35.2	33.5	31.1*
Black & White Lakes	23B6	4700	1/2	56	22.9	28.9	--	--
			2/5	94	40.5	54.1	45.9	40.0*
Four Streams	23B10	3000	1/2	43	18.1	9.8	--	--
			2/5	78	33.7	24.9	24.4	--
Home Sweet Home	23B5	5200	1/2	66	26.4	40.2	--	--
			2/5	140	52.5	65.2	52.7	58.2*
Sundown Pass	23B8	3900	1/2	54	24.4	--	--	--
			2/5	99	43.3	48.0	44.1	39.1*

\* Adjusted 1948-62 average





# Agencies Assisting with Snow Surveys

## GOVERNMENT AGENCIES

### Canada:

Department of Londs, Forests and Woter Resources,  
Water Resources Service, British Columbia

### States:

Washington State Department of Woter Resources  
Washington State Department of Natural Resources

### Federal:

Department of the Army  
Corps of Engineers  
U. S. Department of Agriculture  
Forest Service  
U. S. Department of Commerce  
Weother Bureau  
U. S. Department of the Interior  
Bonneville Power Administration  
Bureau of Reclomation  
Geological Survey  
Notional Park Service

## PUBLIC AND PRIVATE UTILITIES

Chelan County P.U.D.  
Pocific Power ond Light Compony  
Puget Sound Power and Light Company  
Washington Woter Power Company

## OTHER PUBLIC AGENCIES

Okonogon Irrigation District  
Wenatchee Heights Irrigation District

## MUNICIPALITIES

City of Walla Walla  
City of Tacoma  
City of Seattle

*Other organizations and individuals furnish valuable information for snow survey reports. Their cooperation is gratefully acknowledged.*

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